CHAPTER 1

INTRODUCTION

1.1 PROJECT BACKGROUND

In the sixties and early seventies racers raced mostly for fun and were not very sophisticated in figuring out how to make their race cars go faster. In those days everyone built their own engines, race cars, and even their own trailers and haulers for their racing efforts. It was always difficult to determine whether a given change in an engine or chassis was really better or not due to all the other variables present in the race car environment. As time marched on and everyone got more experience, more testing tools became available. Manually operated engine dynamometers were used to try and figure out how to build a better, more powerful engine and get a jump on the competition. The advent of personal computers and associated technology further advanced the process as well as vehicle data acquisition systems which became popular.

The main problem in engine test cell is the actual noise level nearly always exceeds the levels permitted by statues. The noise generated by engines causes annoyance to people as well to environment. For human being noise can affect physically, psychologically and socially. Apart from being annoyance, noise damages hearing, interferes with communication, cause tiredness and reduces efficiency. But noise level can not be directly eliminated, it can only be reduce.

The best way to address unwanted sound issues with a view to find out the noise contribution of different sources within the engine dynamometer to total noise. So, accurate measurements and noise analysis by using sound intensity techniques supported with the use of latest software is needed to reduce all the problems because in this project the engine dynamometer is installed in the automotive research laboratory where the surrounding area also involved with the other outdoor classes.

1.2 PROBLEM STATEMENT

There are various of engine dynamometer is fixed to the test-rig at definite level of height that have capability of test engine up to 200HP at the Universiti Malaysia Pahang(UMP) Automotive laboratory. Even when one of the engine performances is being test, it will produce more than the criteria of 65dB which is also the threshold where noise begins to intrude significantly into normal activities such as a conversation even in the close area such as office or home. Additionally there is a time when the engine test is performs; there are also other classes at the same area doing outdoor activities such as experiment; Automotive Technology and Power Plant. This will make the classes are considered "sensitive receivers" due to possible noise interference with instructional programs.

1.3 OBJECTIVES OF STUDY

Basically, the main purposes in accomplishing this task are as shown below:

a) To perform experiment and determine the major source of the noise at the engine dynamometer by using sound intensity method.
b) To investigate the frequency resonance and amplitudes of the system at different RPM

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SCOPES

There are several scopes of this project which are:

a) This research will conducted in different engine's rpm ranging from 1000 to 2500.

b) The types of engine use is single-cylinder, 4 strokes air-cooled diesel engine.

c) The noise that is produce will be detected by using sound intensity probe and then will be processed by using Pulse Labshop 11.1 software.